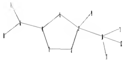
10/573,621



chain nodes :
6 7 8 9 10 11 12 13
ring nodes :
1 2 3 4 5
chain bonds :
1-9 1-10 4-6 6-7 6-8 10-11 10-12 10-13
ring bonds :
1-2 1-5 2-3 3-4 4-5
exact/norm bonds :
1-2 1-5 2-3 3-4 4-5 10-11 10-12 10-13
exact bonds :
1-9 1-10 4-6 6-7 6-8

G1:H,Et,n-Pr,i-Pr,n-Bu,i-Bu,s-Bu,t-Bu,Ph,Cb

G2:OH,MeO,EtO,n-PrO,i-PrO,n-BuO,i-BuO,s-BuO,t-BuO,PhO

G3:Et,n-Pr,i-Pr,n-Bu,i-Bu,s-Bu,t-Bu,Ph

Match level :
1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:CLASS 7:CLASS 8:CLASS 9:CLASS
10:CLASS 11:CLASS 12:CLASS 13:CLASS

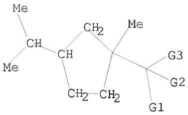
L1   STRUCTURE UPLOADED

=> d his

(FILE 'HOME' ENTERED AT 19:14:26 ON 05 MAY 2009)

FILE 'REGISTRY' ENTERED AT 19:14:43 ON 05 MAY 2009
L1   STRUCTURE UPLOADED

=> d l1
L1 HAS NO ANSWERS
L1   STR



G1 H,Et,n-Pr,i-Pr,n-Bu,i-Bu,s-Bu,t-Bu,Ph,Cb

G2 OH,MeO,EtO,n-PrO,i-PrO,n-BuO,i-BuO,s-BuO,t-BuO,PhO

G3 Et,n-Pr,i-Pr,n-Bu,i-Bu,s-Bu,t-Bu,Ph

Structure attributes must be viewed using STN Express query preparation.

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=> s l1
SAMPLE SEARCH INITIATED 19:15:19 FILE 'REGISTRY'
SAMPLE SCREEN SEARCH COMPLETED -      304 TO ITERATE

100.0% PROCESSED      304 ITERATIONS                              0 ANSWERS
SEARCH TIME: 00.00.01

FULL FILE PROJECTIONS:  ONLINE  **COMPLETE**
                        BATCH   **COMPLETE**
PROJECTED ITERATIONS:         5034 TO     7126
PROJECTED ANSWERS:               0 TO        0

L2            0 SEA SSS SAM L1

=> s l1 full
FULL SEARCH INITIATED 19:15:25 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED -     6039 TO ITERATE

100.0% PROCESSED     6039 ITERATIONS                              0 ANSWERS
SEARCH TIME: 00.00.01

L3            0 SEA SSS FUL L1

=>

---Logging off of STN---



=>
Executing the logoff script...


=> LOG Y

COST IN U.S. DOLLARS                              SINCE FILE      TOTAL
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FULL ESTIMATED COST                                   185.88     186.10

STN INTERNATIONAL LOGOFF AT 19:15:35 ON 05 MAY 2009
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 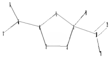

chain nodes :
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ring nodes :
1 2 3 4 5
chain bonds :
1-9 1-10 4-6 6-7 6-8 10-11 10-15
ring bonds :
1-2 1-5 2-3 3-4 4-5
exact/norm bonds :
1-2 1-5 2-3 3-4 4-5 10-11 10-15
exact bonds :
1-9 1-10 4-6 6-7 6-8

G1:H,Et,n-Pr,i-Pr,n-Bu,i-Bu,s-Bu,t-Bu,Ph,Cb

G2:OH,MeO,EtO,n-PrO,i-PrO,n-BuO,i-BuO,s-BuO,t-BuO,PhO

G3:Et,n-Pr,i-Pr,n-Bu,i-Bu,s-Bu,t-Bu,Ph

Match level :
1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:CLASS 7:CLASS 8:CLASS 9:CLASS
10:CLASS 11:CLASS 15:CLASS

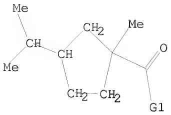
L1 STRUCTURE UPLOADED

=> d his

(FILE 'HOME' ENTERED AT 19:18:59 ON 05 MAY 2009)

FILE 'REGISTRY' ENTERED AT 19:19:19 ON 05 MAY 2009
L1 STRUCTURE UPLOADED

=> d l1
L1 HAS NO ANSWERS
L1 STR



G1 H,Et,n-Pr,i-Pr,n-Bu,i-Bu,s-Bu,t-Bu,Ph,Cb

G2 OH,MeO,EtO,n-PrO,i-PrO,n-BuO,i-BuO,s-BuO,t-BuO,PhO

G3 Et,n-Pr,i-Pr,n-Bu,i-Bu,s-Bu,t-Bu,Ph

Structure attributes must be viewed using STN Express query preparation.

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SAMPLE SCREEN SEARCH COMPLETED -      708 TO ITERATE

100.0% PROCESSED      708 ITERATIONS                             1 ANSWERS
SEARCH TIME: 00.00.01

FULL FILE PROJECTIONS:  ONLINE  **COMPLETE**
                        BATCH   **COMPLETE**
PROJECTED ITERATIONS:        12564 TO    15756
PROJECTED ANSWERS:               1 TO       80

L2            1 SEA SSS SAM L1

=> s l1 full
FULL SEARCH INITIATED 19:19:48 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED -    14167 TO ITERATE

100.0% PROCESSED    14167 ITERATIONS                             9 ANSWERS
SEARCH TIME: 00.00.01

L3            9 SEA SSS FUL L1

=> fil caplus
COST IN U.S. DOLLARS                             SINCE FILE      TOTAL
                                                      ENTRY    SESSION
FULL ESTIMATED COST                                  185.88     186.10

FILE 'CAPLUS' ENTERED AT 19:19:54 ON 05 MAY 2009
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
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FILE COVERS 1907 - 5 May 2009 VOL 150 ISS 19
FILE LAST UPDATED: 4 May 2009 (20090504/ED)

Caplus now includes complete International Patent Classification (IPC) reclassification data for the third quarter of 2008.

CAS Information Use Policies apply and are available at:

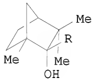
http://www.cas.org/legal/infopolicy.html

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s l3
L4 12 L3

=> d 1-12 bib abs

L4 ANSWER 1 OF 12 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2004:767687 CAPLUS
DN 141:411099
TI An unusual domino retro-ene-Conia reaction: regio- and stereoselective one-carbon ring expansion of fenchol derivatives
AU Ruedi, Georg; Laikov, Dimitri N.; Hansen, Hans-Jurgen
CS Organisch-chemisches Institut, Universitat Zurich, Zurich, CH-8057, Switz.
SO Helvetica Chimica Acta (2004), 87(8), 1990-2021
CODEN: HCACAV; ISSN: 0018-019X
PB Verlag Helvetica Chimica Acta
DT Journal
LA English
OS CASREACT 141:411099
GI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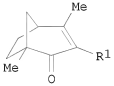
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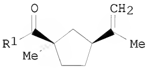
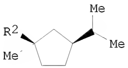

III


IV

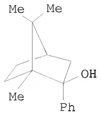
AB The 2-exo-substituted fenchol derivs. I (R = CH:CH2, CH:CHMe, CMe:CH2, CMe:CHMe, C.tplbond.CSiMe3, C.tplbond.CH, Ph), easily prepared from (-)-fenchone in good-to-excellent yields, were pyrolyzed by dynamic gas-phase thermo-isomerization (DGPTI). At temps. of ca. 620°, the substrates with a hydroxyallyl or a hydroxypropargyl moiety underwent an initial retro-ene reaction under cleavage of the C(2)-C(3) bond to form enol-ene intermediates with no loss of optical activity. These intermediates then experience either tautomerization to the corresponding α,β-unsatd. ketones or subsequent Conia rearrangement under

one-carbon ring expansion of the fenchone system to a bicyclo[3.2.1]octane framework. In the case of the isopropenyl substrate I (R = CMe:CH2), the sterically crowded Conia product underwent a new type of 'deethanation' reaction by stepwise loss of two Me radicals, giving rise to the thermodynamically favored enone II (R1 = Me). A similar relaxation behavior was observed in the case of the ethynyl substrate I (R = C.tplbond.CH), which showed a remarkable 1,3-Me shift after the Conia reaction, leading to the α,β-unsatd. cyclic ketone II (R1 = Et). The homolytic cleavage of the weakest single bond in I (R = CH:CH2, CH:CHMe, CMe:CH2) turned out to be a competing reaction pathway. Intramol. H-abstraction within the generated diradical intermediates produced the monocyclic ketones III (R1 = Et, n-Pr, CHMe2), besides the products obtained by tautomerization and Conia reaction. In contrast, a Ph substituent at C(2) in I (R = Ph) allowed only the passage through a diradical species to provide phenone IV (R2 = COPh), which was converted by regioselective Baeyer-Villiger oxidation to the optically active cyclopentanol IV (R2 = OH). Both reaction channels, the domino retro-ene-Conia rearrangement and the diradical-promoted H-transfer, have been shown to proceed highly stereoselectively. The absolute configuration of the newly formed stereogenic centers in all compds. was assigned by 1H-NOE expts. The reaction mechanism of the novel domino retro-ene-Conia reaction was established by both a series of 2H- and 13C-labeling expts., as well as by a detailed computational anal.

RE.CNT 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 2 OF 12 CAPLUS

AN 2003:469904 CAPLUS
DN 139:180199
TI Stereo- and Regioselectivity in Dynamic Gas-Phase Thermoisomerization (DGPTI): Novel Route to α-Campholanic Acid and Derivatives
AU Rueedi, Georg; Nagel, Matthias; Hansen, Hans-Juergen
CS Organisch-Chemisches Institut der Universitaet, Zurich, 8057, Switz.
SO Organic Letters (2003), 5(15), 2691-2693
CODEN: ORLEF7; ISSN: 1523-7060
PB American Chemical Society
DT Journal
LA English
OS CASREACT 139:180199
GI



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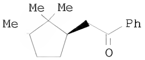

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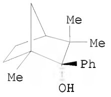
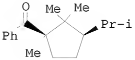


III



IV

AB Dynamic gas-phase thermoisomerization (DGPTI) of (-)-2-phenylisoborneols (I) effects stereo- and regioselective ring opening under formation of (+)-trans-α-campholanic acid derivs., e.g., II. Similarly, (-)-2α-phenylfenchol (III) underwent under DGPTI conditions ring opening to (-)-fencholic acid derivs., e.g., IV. In both cases, DGPTI led to cleavage of the weakest bond in the isomeric bicyclic structures. A reaction mechanism involving a diradical intermediate is supported by a deuterium labeling study.

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 3 OF 12 CAPLUS

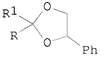
AN 1988:112286 CAPLUS
DN 108:112286
OREF 108:18389a,18392a

TI Preparation of phenylacetaldehyde and 1,3-dioxolanes from styrene oxide with mineral acid-treated activated carbon catalyst

AU Kurata, Takeo; Koshiyama, Takao
CS Fac. Eng., Meiji Univ., Kawasaki, Japan

SO Yukagaku (1987), 36(6), 436-40
CODEN: YKGKAM; ISSN: 0513-398X
DT Journal
LA Japanese
OS CASREACT 108:112286

GI

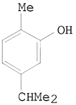


II

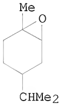
AB The isomerization of styrene oxide (I) and reactions of I with ketones, catalyzed by mineral acid-treated activated carbon, were investigated. Phenylacetaldehyde was obtained in 94% yield by the isomerization of I catalyzed by 2N HNO_3-treated activated carbon in EtOAc at 75°C.

2,2-Dimethyl-4-phenyl-1,3-dioxolane was synthesized in high yield (81%) by a simple reaction of I with acetone, catalyzed by 2N H_2SO_4-treated activated carbon at 55°C. Similarly, the reaction of I with RR1CO [R = R1 = Et, RR1 = $(CH_2)n$, n = 4,5] gave dioxolanes II in 20-41% yields.

L4 ANSWER 4 OF 12 CAPLUS COPYRIGHT 2009 ACS on STN
AN 1979:541012 CAPLUS
DN 91:141012
OREF 91:22754h,22755a
TI Formation of carvacrol from carvomenthene epoxide by palladium catalyst
AU Kurata, Takeo
CS Fac. Eng., Meiji Univ., Kawasaki, Japan
SO Yukagaku (1979), 28(6), 407-10
CODEN: YKGKAM; ISSN: 0513-398X
DT Journal
LA Japanese
GI



I



II

AB Carvacrol (I) was prepared in 83.3% by heating carvomenthene epoxide (II) with Pd at 200° for 12 h according to a previously reported procedure (Kurata, 1978). Pt, Ru, or Rh in place of Pd gave lower yields of I.

L4 ANSWER 5 OF 12 CAPLUS COPYRIGHT 2009 ACS on STN
AN 1979:104127 CAPLUS
DN 90:104127
OREF 90:16455a,16458a
TI Epoxide rearrangement. 10. Isomerization of carvomenthene oxide over solid acids and bases
AU Arata, Kazushi; Akutagawa, Susumu; Tanabe, Kozo
CS Dep. Chem., Hokkaido Univ. Educ., Hakodate, Japan
SO Bulletin of the Chemical Society of Japan (1978), 51(8), 2289-93
CODEN: BCSJA8; ISSN: 0009-2673
DT Journal
LA English
AB The reaction of cis- and trans- carvomenthene oxide over solid acids and bases gave trans- and cis-1-methyl-3-isopropyl-1-cyclopentanecarboxaldehyde (I), carvomenthone (II), 1(7)-p-menthen-2-ol of trans (III) and cis form and carvotanacetol of trans- and cis-form. A large amount of I was formed together with II over Si2-Al_2O_3, SiO_2-TiO_2 and zeolite H-F9. $LiClO_4$, H_2SO_4/SiO_2, $FeSO_4$, and solid H_2PO_4 gave preferentially II, whereas TiO_2-ZrO_2 formed mainly III and IV. With respect to aluminas, carbonyl compds. (I, II) were predominantly formed over Al_2O_3D, whereas allylic alcs. (III, IV) where preferentially given by Al_2O_3 A and B.

L4 ANSWER 6 OF 12 CAPLUS COPYRIGHT 2009 ACS on STN
AN 1964:61074 CAPLUS
DN 60:61074
OREF 60:10722a-b
TI Rearrangement of limonene and carvomenthene epoxides

AU Settine, R. L.; Parks, G. L.; Hunter, G. L. K.
CS U.S. Fruit & Vegetable Prod. Lab., Winter Haven, FL
SO Journal of Organic Chemistry (1964), 29(3), 616-18
CODEN: JOCEAH; ISSN: 0022-3263
DT Journal
LA Unavailable
GI For diagram(s), see printed CA Issue.
AB Limonene oxide (I) in the presence of $ZnBr_2$ rearranges with ring contraction to 1-methyl-3-isopropenylcyclopentyl-1-carboxaldehyde (II) and Me 3-isopropenylcyclopentyl ketone and isomerizes to dihydrocarvone. Similarly, carvomenthene oxide (III) rearranges to 1-methyl-3-isopropylcyclopentyl-1-carboxaldehyde (IV) and Me 3-isopropyl-cyclopentyl ketone and isomerizes to carvomenthone. Structural elucidation of the rearranged products was achieved by chemical synthesis and supported by nuclear magnetic resonance. Several alc. and acetate derivs. of rearranged products were prepared

L4 ANSWER 7 OF 12 CAPLUS COPYRIGHT 2009 ACS on STN
AN 1959:121589 CAPLUS
DN 53:121589
OREF 53:21711i,21712a-h
TI Alicyclic diketones and diols. II. Dehydration of cis-and trans-2,2,5,5-tetramethylcyclohexane-1,3-diol
AU Allan, A. W.; Sneeden, R. P. A.; Wilson, J. M.
CS Univ. Glasgow, UK
SO Journal of the Chemical Society (1959) 2186-92
CODEN: JCSOA9; ISSN: 0368-1769
DT Journal
LA Unavailable
AB cf. C.A. 52, 10905g. The general method of dehydration was to place 4 g. diol, 8 g. fused $KHSO_4$ and 2 g. kieselguhr in a combustion tube, cover the mixture with 4 g. $KHSO_4$ and 1 g. kieselguhr, heat 5 hrs. at 170-90° under H_2O-pump vacuum and collect the products in an Me_2CO-solid CO_2 trap. Thus, trans-2,2,5,5-tetramethylcyclohexane-1,3-diol (I)gave 3.2 g. product which in isopentane chromatographed on alumina and eluted with isopentane gave 1.70 g. 1,1-dimethyl-4-isopropylidene-2-cyclopentene (II), $b_{1.7}$ 28-30°, $n^{20}D$ 1.4730, λ 243 mμ (ε 12,500), ν 1620, 1600, 1370, 360, 816, and 768 cm.-1 Further elution with Et_2O gave 0.87 g. 2,3,5,5-tetramethylcyclohexanone (III) [purified by way of oxime, m. 136-7 (petr. ether)], $b_{1.5}$ 52-4°, $n^{21}D$ 1.4510, λ 229, 265, 361 mμ (ε 18,700, 10,500, 23,200); 2,4-dinitrophenylhydrazone, m. 132-4°. Elution with Et_2O-MeOH gave a small amount of 2,2,5,5-tetramethylcyclohex-3-enol (IV), prisms, m. 44-5°; hydrogen phthalate, prisms, m. 153.5-4.5° (AcOH). cis-I gave 1.8 g. II, III, and IV. II (0.88 g.), AcOH, and 100 mg. PtO_2 absorbed 2 moles H; neutralization with NaOH and distillation gave 1,1-dimethyl-3-isopropylcyclopentane (V), b. 148-9°, $n^{20}D$ 1.4267. II (1.0 g.) in 17 cc. anhydrous EtOAc at -75° was treated with O_3 and the products isolated in the usual manner to give 0.345 g. of an unidentified 2,4-dinitrophenylhydrazone and 0.722 g. $2,4-(O_2N)_2C_6H_3NHN:CMe_2$. To 125 g. (+)-fencholamide [plates, m. 100-1°, $[\alpha]^{18}D$ 1.4° (c 2.09)] in 600 cc. concentrated H_2SO_4 was added 70 g. $NaNO_2$ in about 80 cc. H_2O, the whole warmed until N evolution ceased, diluted with H_2O, extracted with Et_2O, the Et_2O exts. extracted with aqueous NaOH, the NaOH exts. acidified and again extracted with Et_2O gave 60 g. (+)-fencholic acid, $b_{0.5}$ 116-18°, $n^{21}D$ 1.4558, $[\alpha]D$ 3.97° (c 7.6). To 29 g. $LiAlH_4$ in 600 cc. dry Et_2O was added 54 g. (+)-fencholic acid in 500 cc. dry Et_2O, the whole refluxed 2 hrs. and worked up in the usual manner to give (+)-dihydrofenchyl alcohol (VI), $b_{0.5}$ 84°, $n^{16}D$ 1.4560, $[\alpha]^{20}D$ 12.25° (c 4.65). To 5

g. VI in 50 cc. C_6H_6 was added 5 g. $K_2Cr_2O_7$, 55 cc. H_2O and 6 g. concentrated H_2SO_4 and the whole shaken vigorously 4 hrs. under CO_2 to give 2.65 g. (+)-dihydrofencholaldehyde, b0.5 50-4°, n24D 1.4460; semicarbazone (VII), needles, m. 152-3° (C_6H_6); 2,4-dinitrophenylhydrazone, red prisms, m. 123-4°(alc.). VII (3.36 g.) and 7.5 g. KOH heated at 200° until N evoln. ceased gave as distillate, (+)-1,1-dimethyl-3-isopropylcyclopentane (VIII), b. 148-9°, n21D 1.4240, [α] 20D 2.94° (c 1.46); the infrared spectra of VIII and V were superimposable. To 0.320 g. III in 10 cc. AcOH was added 1 mole Br in AcOH slowly, then 0.388 g. 2,4-$(O_2N)_2C_6H_3NHNH_2$ added to give 0.14 g. 2,3,5,5-tetramethyl-2-cyclohexenone 2,4-dinitrophenylhydrazone (IX), red plates, m. 175-7° (EtOH). 2,5,5-Trimethylcyclohexane-1,3-dione and excess CH_2N_2 gave 3-methoxy-2,5,5-trimethyl-2-cyclohexenone (X), prisms, m. 55-8° (petr. ether). To MeMgI (from 1.86 g. Mg) was added 3.2 g. X and the whole refluxed 6 hrs. to give 1.5 g. 2,3,5,5-tetramethyl-2-cyclohexenone, b18 65-7°, n19D 1.4830, λ 244 mμ (ε 15,200); 2,4-dinitrophenylhydrazone identical with IX. 3-Isobutoxy-5,5-dimethylcyclohex-2-enone, b0.1 76°, n18D 1.4810, (60 g.) and 5 g. $LiAlH_4$ in Et_2O gave 5,5-dimethylcyclohex-2-enone (XI), b16 76°, n22D 1.4699; 2,4-dinitrophenylhydrazone, red prisms, m. 161-3°. XI (5 g.), 50 cc. EtOH, 0.5 g. 10% Pd-C, and H gave 3,3-dimethylcyclohexanone (XII), b1.5 44-5°, ν 1710 cm.-1 To $NaNH_2$ (from 1.03 g. Na) in 30 cc. dry Et_2O was added 2.82 g. XII in 10 cc. dry Et_2O followed by 7.35 g. MeI in an equal volume of Et_2O; the whole refluxed 4 hrs. gave 3.3 g. crude product; semicarbazone, prisms, m. 198.5-201.5° (C_6H_6-EtOH), hydrolyzed to 2,2,5,5-tetramethylcyclohexanone (XIII), b46 98°, n19D 1.4448; 2,4-dinitrophenylhydrazone, red plates, m. 169-71° ($CHCl_3$-EtOH). XIII and $LiAlH_4$ gave 2,2,5,5-tetramethylcyclohexanol (XIV), m. 52-4°. Hydrogenation of IV H phthalate in EtOH with PtO_2 and saponification yielded XIV, m. 59-60°; H phthalate m. 168.5-70.5°.

L4 ANSWER 8 OF 12 CAPLUS

AN 1955:46271 CAPLUS

DN 49:46271

OREF 49:8958a-i,8959a-i,8960a-i,8961a-i,8962a-e

TI Diuretics. α,α-Disubstituted 2-piperidineethanols and 3,3-disubstituted octahydropyrid[1,2-c] oxazines

AU Tilford, Charles H.; Van Campen, M. G., Jr.

CS William S. Merrell Co., Cincinnati, O.

SO Journal of the American Chemical Society (1954), 76, 2431-41
CODEN: JACSAT; ISSN: 0002-7863

DT Journal

LA Unavailable

GI For diagram(s), see printed CA Issue.

AB A series of α,α-disubstituted-2-pyridineethanols (I) were prepared and hydrogenated to yield the corresponding α,α-disubstituted-2-piperidineethanols (II), which with CH_2O gave octahydropyrid[1,2-c]oxazines (III). The III were reduced with aqueous HCO_2H to α,α-disubstituted-1-alkylpiperidineethanols (IV). A number of the II and III had diuretic and antifungal properties. Cycloheptyl bromide (34 g.) added with stirring to 6.5 g. Mg in 300 cc. dry Et_2O during 2 h., the Et_2O solution decanted, treated with stirring with 26 g. PhCN, the mixture refluxed 0.5 h., decomposed with 100 cc. petr. ether (b. 40-60°), and the organic layer fractionated yielded 31% Ph cycloheptyl ketone, b0.2 115-17°, n25D 1.5405; (2,4-dinitrophenylhydrazone, m. 170-1°). Similarly were prepared the following ketones (b.p./mm. and % yield given): Ph bicyclo[2.2.1]hept-5-en-2-yl, 51, 107-10°/0.5, n25D 1.5650, from 3-cyano-1,4-endomethylene-5-cyclohexene; Ph 4-rnethylcyclohexyl, 81, 159-62°/14, m. 47-8° (2,4-dinitrophenylhydrazone, m. 181-3°); Ph cyclohexyl, 71,

164-5°/18, m. 57-60°; Ph 3-cyclohexenyl, 64, 165-70°/18, n25D 1.5572; Ph cyclopentyl, 70, 142-4°/12; Ph C6H13, 90, 148-51°/14; C6H13C6H13, 45, 130-3°/11, m. 29-31°; Et C6H17, 48, 125-7°/12 (semicarbazone, m. 87°), and cyclohexyl hexyl (V), 48%, b12 138-42°. In the preparation of V from cyclohexyl bromide and C6H13CN (VI), 60% trimeric VI.HCl was obtained when the reaction mixture was decomposed with aqueous NH4Cl; the trimer is believed to be 2,6-dihexyl-5-pentyl-4-aminopyrimidine (VII) HCl salt monohydrate, m. 130-2° (anal. sample, m. 132-4°); free VII, oil; 30% VII.HCl.H2O was also obtained from VI and C6H13MgBr. Cyclohexylmagnesium bromide from 122 g. cyclohexyl bromide, 20 g. Mg, and 350 cc. Et2O treated during 2 h. at -15° to -20° with 100 g. C6H13COCl in 250 cc. Et2O and the mixture worked up in the usual manner gave 71 g. (52%) V, b11 130-6°. Similarly was prepared: Ph 1-methyl-3-(isopropyl)-cyclopentyl ketone, 72%, b0.12 118-20°, n26D 1.5220 (2,4-dinitrophenylhydrazone, m. 142-4°. 2-Picoline (55 g.), 55 g. PhBz, and 9.2 g. LiNH2 refluxed 16-20 h. with stirring, the mixture poured cautiously into 400 cc. H2O, and the precipitate washed with two 200-cc. portions of H2O and dried yielded 81 g. (96%) crude α,α-diphenyl-2-pyridineethanol (VIII), m. 138-40°, which, recrystd. from MeOH or C6H6, yielded 85% pure VIII, m. 152-3°; HCl salt, m. 221-2° (method A). Similarly were prepared the following I (substituents, % yield, m.p. (corrected), and m.p. (corrected) of HCl salt given): Ph, p-MeC6H4, 73, 117-19°, 206-7°; Ph, p-EtOC6H4, 68, 122-4°, 169-70°; Ph, p-ClC6H4 (IX), 70, 111-12°, 213-15° p-MeC6H4, p-MeC6H5, 25, 137-9°, 197-8°; p-MeOC6H4, p-MeOC6H4 (X), 80, 111-12°, 207-8°; p-MeOC6H4, m-BrC6H4 (XI), 34, 106-7°, 139-43°; p-Me2NC6H4, p-Me2NC6H4, 34, 190-2°, 160-3° (hygroscopic); 6-Me derivative (XX) of VIII, 72, 122-4°, 220-2°; 4-isomer (XXI) of VIII, 70, 122-4°, 265-6°. The 3-isomer (XXII) of VIII.HCl, m. 256-7° (hygroscopic), was prepared in 7% yield by the method of Nunn and Schofield (C.A. 48, 2061b). Cyclohexyl Ph ketone (124 g.) in 250 cc. dry Et2O added rapidly with stirring at about -20° to picolyl-Li from 11 g. Li, 126 g. PhBr, 80 cc. 2-picoline, and 340 cc. Et2O, the mixture treated with dilute aqueous NH4Cl, filtered, and the white precipitate washed with petr. ether and dried yielded 110 g. (60%) α-cyclohexyl-α-phenylpyridineethanol (XII), m. 107-9° (HCl salt, m. 179-81°); the Et2O layer from the filtrate concentrated to about 100 cc., diluted with 400 cc. hot ligroine (b. 90-100°), cooled, and filtered gave an addnl. 38 g. (20%) XII, m. 106-8°; (method B). Similarly were prepared the following I [substituents, % yield, m.p. (corrected), and m.p. (corrected) of HCl salt given]: Ph, bicyclo[2.2.1]hept-5-en-2-yl, 85, 111-13°, 183-4°; Ph, cycloheptyl, 68, 78-9°, 184-6°; Ph, 4-methylcycloheptyl, 82, 120-1°, 165-7°; Ph, 1-methyl-3-isopropylcyclopentyl, 44, -, 205-7°; Ph, cyclopentyl, 67, 87-9°, 193.4°; Ph, C11H23, 77, 66-8°, 142-4°; Ph, C8H17, 84, 57-9°, 142-4°; Ph, C6H13, 73, 74-5°, 149-50°; Ph, Am, 84, 75-7°, 122-4°; Ph, iso-Pr, 46, -, 209-11°; dicyclohexyl (XIV), 60, 66-7, 195-7° (hygroscopic); 3-cyclohexenyl, H, 72, -, -[HBr salt, m. 71-4° (hygroscopic)], from 1,2,5,6-tetrahydrobenzaldehyde; cyclohexyl, C6H13, 57, -, 148-50°; C8H17, Et, 44, -, 90-3°; diheptyl, 81, -, 95-7°; dihexyl, 55, -, 95-6°; di-iso-Bu, 33, -, 156-7°; di-tert-Bu, 73, 63-5°, 214-16°. Also the following substituted cyclic alcs., RC(OH)R', where the substituent, R', is 2-pyridylmethyl [RCHOH, % yield, m.p. (corrected), and m.p. (corrected) of HCl salt given]: 1-indanol, 20, -,

143-4°; 2-cyclohexyl cyclohexanol, 39, 92-3°, 210-12°; 2-(p-methoxyphenyl)cyclohexanol, 77, 85-7°, -; d-borneol, 91, 67-8°, 196-9°; dl-fenchyl alc., 35, 110-11°, -. Fluorenone (119 g.) in 200 cc. dry PhMe treated with picolyllithium as in method B, the mixture heated 8 h. with stirring at 115-20°, the Et2O evaporated through the condenser, the residual mixture decomposed with aqueous NH4Cl, the PhMe evaporated in vacuo, and the residue recrystd. from Et2O-petr. ether yielded 70 g. (37%) 9-(2-pyridylmethyl)-9-fluorenol, m. 84-6°; HCl salt, m. 167-9°. Similarly were prepared: 9-(2-pyridylmethyl)-9-xanthenol, 66%, m. 108-10°; and 1-(2-pyridylmethyl)-1-acenaphthenol HCl salt, 40%, m. 166-7°. By the method of Howton and Golding (C.A. 44, 4471h) were prepared the following compds. (except that 1 equivalent PhLi was used instead of KNH2 in the preparation of the 2-pyridylmethyl ketones) (% yield and m.p. (corrected) given): 2-(α-methylphenacyl)pyridine, -, 66-8° (HCl salt, 35, 200-2°) [methobromide, 50, 163-5° (decomposition)]; 2-(α-phenylphenacyl)pyridine (XV) HCl salt, 54, 173-6° [methobromide, 74, 216-18° (decomposition)]; cyclohexyl 2-pyridylmethyl ketone HCl salt, 31, 133-5° [methobromide, 77, 196-8° (decomposition)]; 2-pyridyl 2-pyridylmethyl ketone, 38, 87-8° [dimethobromide, 7, 192-3° (decomposition)]; 1-phenylcyclohexyl 2-pyridylmethyl ketone (XVI) HCl salt, 50, 197-8°; Me 2-pyridineacetate, 39, - (b12 115-17°) [methobromide, 86, 127-8° (decomposition)]. 2-Phenacylpyridine HCl salt hydrogenated by the method of Howton and Golding (loc. cit.) yielded 2-phenacylpiperidine (XVII) HCl, m. 167-9° (from EtOH-iso-PrOH); semicarbazone HCl salt, m. 217-18°. XVII.HCl neutralized with saturated aqueous Na2CO3, extracted with petr. ether (b. 40-60°), and the extract concentrated in vacuo on the steam bath gave XVII. Similarly were prepared the following compds.: 2 - (α - methylphenacyl)piperidine (XVIII) di-HBr salt, 45, 138-40°; cyclohexyl 2-piperidylmethyl ketone HBr salt, 94, 175-7° (HCl salt, m. 171-3°); Me 2-piperidineacetate (XIX) HBr salt, 88, 133-5°. When crystalline free I could not be obtained by the methods described, the HCl salts were prepared in the following manner: the Et2O or PhMe extract of the decomposed reaction mixture was evaporated in vacuo, the residue dissolved in 500 cc. dry Et2O, the solution treated with less than the equivalent amount alc. HCl, and the crystalline or gummy HCl salt isolated by filtration or decantation and recrystd. from EtOAc-MeOH mixture I (0.2 mol) in 250 cc. MeOH heated 3-5 days with excess MeBr in a pressure bottle at 60-75°, the mixture evaporated on the steam bath, and the residue recrystd. from EtOAc-MeOH gave the corresponding methobromides (I, % yield, and m.p. (corrected) given]: XX, 45, 214-16°; IX, 38, 202-4°; XII, 60, 222-3°; X, 40, 205-8°; XI, 12, 209-10°; XIV, 79, 210-12°; XXII, 2, 250-1°; XXI, 86, 213-15° (all melted with decomposition). I.HCl(0.2 mol), 200 cc. MeOH, and 0.6-0.8 g. PtO2 hydrogenated at 3-4 atmospheric pressure until 0.6 mol H had been absorbed, the catalyst filtered off, and the filtrate concentrated to about 1/4 the original volume, diluted with approx. 200 cc. hot EtOAc, cooled, and filtered gave the corresponding II (method C); in this manner were prepared the following α-substituted-α-phenyl-2-piperidineethanol HCl salts [substituents, % yield, m.p. (corrected) given]: Ph (XXIII), 85, 202-3° (free base, m. 190-2°); p-MeC6H4, 80, 213-15° (free base, m. 165-6°); p-EtOC6H4, 30, 133-5°; p-ClC6H4, 48, 235-6°; cycloheptyl, 90, 190-3° (free base, m. 84-6°); 4-methylcyclohexyl, 42, 208-10°; cyclohexyl, 96, 206-8° (free base, m. 130-2°); 1-methyl-3-isopropylcyclopentyl, 86, 241-3°;

cyclopentyl, 77, 183-5°; $C_{11}H_{23}$, 89, 134-6°; C_8H_{17}, 68, 151-3°; C_6H_{13}, 74, 167-8°; Am, 72, 164-6°; iso-Pr, 53, 215-16°; and the following II.HCl salts [substituents, % yield, m.p. (corrected) given]: p-MeC_6H_4, p-MeC_6H_4, 87, 209-10°; p-$MeOC_6H_4$, p-$MeOC_6H_4$, 75, 177-9° (gave, recrystd. from MeOH-Et_2O, a polymorph, m. 138-40°); p-$MeOC_6H_4$, m-BrC_6H_4, 38, 134-7°; dicyclohexyl, 70, 260-2°; cyclohexyl, C_6H_{13}, 91, 132-4°; cyclohexyl, H, 44, 218-19°; C_8H_{17}, Et, 10, 159-60°; C_7H_{15}, C_7H_{15}, 54, 57-8°; C_6H_{13}, C_6H_{13}, 43, 76-7°; iso-Bu, iso-Bu, 91, 156-8°; tert-Bu, tert-Bu, 98, 247-9°. HCl salts of substituted cyclic alcs. RC(OH)R', where the substituent, R', is 2-piperidylmethyl [RCHOH, % yield, and m.p. (corrected) given]: 1-indanol, 48, 224-5°; 9-fluorenol, 73, 250-2°; 1-acenaphthenol, 74, 197-8°; 9-xanthenol, 60, 193-5° (unstable); 2-cyclohexylcyclohexanol, 57, 249-50°; 2-(p-methoxyphenyl)cyclohexanol, 77, 223-4°; d-borneol, 85, 302-3°; dl-fenchyl alc., 52, 269-70° (free base, 86-7°). 6-Me derivative of XXIII, 30, 235-7°; 3-isomer of XXIII, 95, 198-201° (free base, m. 107-9°); 4-isomer of XXIII, 85, 266-7°. Similarly were prepared, with 4 instead of 3 mol. equivs. of H, α-phenyl-β-methyl-2-piperidineethanol, 50, 268-70°, and α,β-diphenyl-2-piperidineethanol (XXIV), 64, 255-8°. The appropriate II.HCl (0.3 mol), 500 cc. MeOH, and 40 cc. aqueous CH_2O (0.48 mol) refluxed 7-16 h., about 300 cc. MeOH distilled from the mixture, the residual solution diluted with 3-5 vols. EtOAc, cooled, and the precipitate filtered off gave the III.HCl; reworking the filtrates gave 2nd and 3rd crops; the combined crude III.HCl were recrystd. from EtOAc with iso-PrOH. The free II used in similar runs and the hot mixture diluted with H_2O until cloudy, cooled, and filtered gave the free III which were usually stable compds. (method D); however, 1 alkyl substitution appears to decrease the stability. In this manner were prepared the following 3,3-disubstituted III.HCl [substituents, % yield, and m.p. (corrected) given]: Ph, p-MeC_6H_4, 61, 140-1°; Ph, Ph, 75, 224-6° [free base (XXV), m. 77-9°]; Ph, p-$EtOC_6H_4$, 55, 210-12°; Ph, p-ClC_6H_4, 39, 232-4°; Ph, bicyclo[2.2.1]-hept-2-yl, 71, 210-12°; Ph, cycloheptyl, 75, 270-2°; Ph, 4-methylcyclohexyl, 53, 273-5°; Ph, cyclohexyl, 93, 268-9°; Ph, 1-methyl-3-isopropylcydopentyl, 98, 191-3°; Ph, cyclopentyl, 67, 238-40°; Ph, $C_{11}H_{23}$, 79, 212-13°; Ph, C_8H_{17}, 92, 226-8°; Ph, C_6H_{13}, 94, 235-6°; Ph, Am, 66, 244-6°; Ph, iso-Pr, 97, 273-4°; Ph, 2-pyridyl, 61, 149-50°; p-MeC_6H_4, p-MeC_6H_4, 87, 236-8°; p-$MeOC_6H_4$, p-$MeOC_6H_4$, 63, 218-20°; p-$MeOC_6H_4$, m-BrC_6H_4, 60, 135-8°; dicyclohexyl, 95, 272-3°; cyclohexyl, C_6H_{13}, 49, 250-1°; cyclohexyl, H, 65, 173-5°; C_8H_{17}, Et, 80, 190-2°; C_7H_{15}, C_7H_{15}, 81, 206-7°; C_6H_{13}, C_6H_{13}, 76, 229-30°; iso-Bu, iso-Bu, 96, 244-5°. HCl salts A [XR1R2, % yield, and m.p. (corrected) given]: 1-indanylidene, 86, 290-2°; 9-fluorenylidene, 98, 242-4°; 1-acenaphthenylidene, 83, 230-2°; 2-cyclohexylcyclohexanylidene, 80, 281-2°; 2-(p-methoxylphenyl)-cyclohexanyl, 24, 235-6° d-bornylidene, 85, 246-8°; dl-fenchyl, 70, 288-90°. 3-Phenyl-4-Me derivative of III.HCl, 16, 188-90°; 3,4-di-Ph derivative, 94, 192-5°; 4,4-diphenyl-1-aza-5-oxabicyclo-[4.2.2]decane HCl salt, 71, 277-8°; 1-Me derivative of XXV, 53, 139-41°; 1-Et derivative of XXV, 63, 162-4° (free base, m. 91-2°). The 3-cyclohexyl-3-Ph derivative of III.HCl stirred 24 h. in 10% HCl or 5 h. in concentrated HCl was recovered in 92 and 40% yield, resp.; the corresponding 1-Me derivative, m. 150-1° (decomposition), kept a few days at room temperature decomposed into AcH and the α-cyclohexylα-Ph substituted II.HCl.

α-Phenyl-2-piperidineethanol (24 g.), 13 g. BzH, and 100 cc. MeOH refluxed 24 h. and the mixture worked up as in method D gave only 8 g. recovered starting material. XXIII refluxed 24 h. with an equimol. amount of p-MeOC6H4CHO or with 100% excess cyclohexanone did not undergo reaction. The appropriate Grignard reagent (0.2 mol) in refluxing Et2O treated during 1 h. with 22 g. 1-methyl-2-phenacylpiperidine (XXVI), the mixture refluxed 0.5 h., treated with dilute aqueous NH4Cl, diluted with an equal volume of ligroine (b. 70-90°), and the organic layer concentrated on the steam bath to 150 cc., cooled overnight at -12°, and filtered gave the corresponding α,α-disubstituted-1-methyl-2-piperidineethanols (XXVII) usually as white crystalline solids (method E); when the free XXVII was not a solid, the petr. ether solution was diluted with 3 vols. dry Et2O and treated at -10° with 0.07-0.09 mol alc. HCl, and the precipitate recrystd. from iso-PrOH to give the XXVII HCl salt. By method E were prepared the following α-substituted-α-phenyl-1-methyl-2-piperidineethanols (XXVIII) [α-substituent, % yield, and m.p. (corrected) of HCl salt given]: Ph, 50, 239-40° (gave on recrystn. from EtAc-MeOH a polymorph, m. 219-21°; mixed m.p., m. 240°) [free base (XXIX), m. 121-3°]; p-EtOC6H4, 20, 173-4°; p-ClC6H4, 28, 163-5°; m-ClC6H4, 22, 185-8°; PhCH2, 47, 230-1°; 2-furyl, 10, 238-40°. Method E was unsuccessful with cyclohexylmagnesium bromide in boiling Et2O or boiling PhMe and yielded only about 50% recovered starting ketone. With the appropriate organo-Li compound instead of the Grignard derivative were prepared by method E the following XXVIII HCl salts: 2-thienyl, 32, 160-2° (free base, m. 100-1°); 2-pyridyl, 50, 104-6°. XVIII gave with the appropriate Grignard reagent by method E the β-Me derivative of XXIX.HCl, 48%, m. 134-8°. XIX treated with 3 mol. equivs. of p-ClC6H4MgBr by method E yielded 19% p,p'-di-Cl derivative of XXIX.HCl, m. 190-3°. XIX refluxed 24 h. with cyclohexylmagnesium bromide yielded 85% cyclohexyl 1-methyl-2-piperidylmethyl ketone HCl salt, m. 171-3°. The appropriate methobromides of I hydrogenated by method C gave the following XXVII.HCl [substituents, % yield, and m.p. (corrected) given]: Ph, cyclohexyl, 60, 150-5° (free base, 77%, m. 191-3°); p-MeOC6H4, p-MeOC6H4, 50, 202-4°; cyclohexyl, cyclohexyl, 63, 180-3°; 6-Me derivative (XXX) of XXIX, 60, 198-9°; 3-isomer of XXIX.HCl, 70, 166-8°; 4-isomer of XXIX.HCl, 60, 213-14°. XXIII (7 g.), 3.1 g. AcH, and 75 cc. MeOH refluxed 20 min., the resulting solution heated on the steam bath to remove most of the volatile products, the residual mixture hydrogenated in 75 cc. MeOH over 0.5 g. PtO2, filtered, evaporated on the steam bath, the residue dissolved in Et2O, the solution treated with slightly less than 1 equivalent of alc. HCl at 0°, and the precipitate recrystd. from EtOAc-MeOH or EtOAc-Et2O gave 24% 1-Et analog of XXIX.HCl, m. 193-5°. Similarly were prepared: 1-Pr analog of XXIX.HCl, 48%, m. 229-30°; and α-phenyl-α-(1-methyl-3-isopropylcyclopentyl)-1-methyl-2-piperidineethanol HCl salt, 52%, m. 188-90°. II (0.06 mol), 8 g. aqueous CH2O, 6 g. 98-100% HCO2H, and 40 cc. H2O refluxed 24 h. the mixture diluted with 200 cc. H2O, made alkaline with 10% aqueous NaOH, extracted with 200 cc. 1:1 Et2O-petr. ether, the extract treated with 0.05 mol alc. HCl at 0°, and the white crystalline product recrystd. from EtOAc-MeOH or EtOAc-Et2O gave the desired XXVII.HCl (method F). Method F could also be applied to the II.HCl (0.06 mol) in the presence of 0.1 mol HCO2Na. In this manner were prepared: α,α-dihexyl derivative of II.HCl, 72%, m. 83-5° (hygroscopic); and the α,α-di-tert-Bu derivative of II.HCl, 50%, m. 245-6°. The desired XXVII.HCl were also obtained by substituting in method F the II by the appropriate III and omitting the CH2O. In this manner were prepared the following XXVII.HCl [substituents, % yield, and m.p. (corrected) given]: Ph, p-MeC6H4, 55, 205-7° (free base,

m. 96-7°); Ph, bicyclo[2.2.1]hept-2-yl, 62, 237-9°; Ph, 4-methylcyclohexyl, 60, 166-8°; Ph, cyclopentyl, 65, 142-4°; Ph, $C_{11}H_{23}$, 73, 82-4° (hygroscopic); Ph, C_8H_{17}, 59, 91-3°; Ph, C_6H_{13}, 82, 110-12°; Ph, Am, 50, 145-7°; Ph, iso-Pr, 48, 181-3°; p-MeC_6H_4, p-MeC_6H_4, 91, 214-16°; cyclohexyl, C_6H_{13}, 33, 121-4°; cyclohexyl, H, 73, 147-9°; C_8H_{17}, Et, 67, 117-19°; C_7H_{15}, C_7H_{15}, 58, 59-60° (hygroscopic and liquefied when dried over P_2O_5); iso-Bu, iso-Bu, 43, 103-5°.

Also the following substituted cyclic alcs., RC(OH)R'R'', where the substituent, R, is 1-methyl-2-piperidylmethyl [R'R'', % yield, and m.p. (corrected) given]: 9-fluorenylidene, 50, 213-14° (free base, m. 115-16°); 2-cyclohexylcyclohexanylidene, 77, 248-50°; 2-(p-methoxyphenyl)cyclohexanylidene, 50, 215-16°; d-bornylidene, 75, 212-14°; dl-fenchylidene, 50, 258-9°. α,β-Diphenyl-2-piperidineethanol HCl salt, 66, 99-100° (hygroscopic) (free base, m. 137-9°); and XXIX, 75, -. XVII treated with 2 equivs. of 2-pyridyllithium by method E yielded 45% α-phenyl-α-(2-pyridyl)-substituted II, 45%, m. 181-3°; similarly was prepared the α-(2-thienyl) analog, 25%, m. 163-5°. XV.MeBr (24 g.) in 100 cc. MeOH hydrogenated over 0.5 g. PtO_2, the mixture filtered evaporated on the steam bath, and the residue dissolved in 250 cc. EtOAc, cooled, and filtered gave 1-Me piperidine.HBr, white hygroscopic crystals; the filtrate evaporated on the steam bath and the residue recrystd. from 85% MeOH yielded 5 g. solid, m. 53-5°, depressed with authentic $PhCH_2Bz$, m. 55-6°. XVI (32 g.), in 130 cc. MeOH hydrogenated over 0.6 g. PtO_2, and the mixture heated to 75°, filtered, and cooled deposited 6 g. α-(1-phenylcyclohexyl)-2-piperidineethanol (XXXI) HCl salt, white solid, m. 317-18° (decomposition); the mother liquor evaporated on the steam bath and the residue dissolved in 200 cc. hot EtOAc and cooled yielded 25 g. (77%) 1-phenylcyclohexyl 2-piperidylmethyl ketone (XXXII) HCl salt, white crystals, m. 187-9° (anal. sample, m. 188-9°), νmaximum 1720 $cm.^{-1}$ XXXII.HCl (25 g.) hydrogenated 24 h. over 1 g. PtO_2 yielded 75% XXXI.HCl, m. 319-20° (decomposition) [free base, m. 80-1° (from MeOH)]; from the mother liquor was isolated a small 2nd crop, m. 97-8°, possibly a 2nd racemate, which gave a mixed m.p. of 70-80° with XXXI.HCl. XXXI.HCl could not be converted to the III by method D. The reductive alkylation of XXXI.HCl by method F gave 66% b-Me derivative of XXXI.HCl, m. about 100° (hygroscopic) (free lase, m. 75-6°). XXV (4.5 g.), 7 cc. 77% MeBr in MeOH, and 15 cc. MeOH heated 2 days in a pressure bottle at 50°, and the solution concentrated to half the original volume on the steam bath, diluted with 3 vols. EtOAc, cooled, and filtered gave 4 g. (67%) 3,3-diphenyloctahydropyrid[1,2-c]oxazine methobromide (XXXIII), white crystals, m. 263-5° (decomposition) (recrystd. from iso-PrOH, m. 272-3°). Similarly was obtained 80% 3-cyclohexyl-3-Ph analog hemihydrate white crystals, m. 272-4° (decomposition). XXIX gave by the same method 75% methobromide, m. 181-2°, and a 2nd crop, m. 229-30°, evidently a polymorph. XXIII (215 g.) in 250 g. 90% HCO_2H and 150 g. aqueous CH_2O refluxed 30 h. by the method of Clarke, et al. (C.A. 28, 98.9), the mixture evaporated in vacuo on the steam bath, made alkaline with aqueous NaOH, extracted with C_6H_6, the extract evaporated, the oily residue dissolved in Et_2O, and the solution treated with a slight excess of alc. HCl yielded 124 g. (47%) solid, m. 195-205°, which, recrystd. from iso-PrOH and EtOAc, gave 40 g. XXIX.HCl, m. 228-30° (decomposition) (XXIX, m. 116-18°), and 30 g. XXV.HCl, m. 224-6° (decomposition) (XXV, m. 75-7°). XXVI and PhMgBr gave by method E XXIX, m. 118-20° (from 95% EtOH) [HCl salt, m. 236-8° (decomposition)]. XXIX was also prepared in 75-80% yield from XXIII with CH_2O and HCO_2H in dilute aqueous solution by

method F. XXIII (0.1 mol) and 0.2 mol aqueous CH2O refluxed several hrs., the solvent evaporated, and the residue recrystd. from aqueous Me2CO gave XXV, m. 77-9° [HCl salt, m. 224-6° (decomposition)]. XXV in 5% HCl slowly distilled evolved CH2O, identified as 2,4-(O2N)2C6H3NHN:CH2, m. 163.5-65°. XXV refluxed with excess 25% HCO2H yielded XXIII. The antifungal activity of the compds. prepared was determined by the agar-plate technique with paper disks impregnated with the test substance. Inhibition zones indicated the antifungal activity against C. albicans, C. neoformans, N. asteroides, M. audouini, T. rubrum, T. mentagrophytes, T. tonsurans, H. capsulatum, and B. dermatitis test organisms. The most potent compds. were found in the α-alkyl-α-phenyl-2-piperidineethanol series, with peak activity in compds. having about 8 C atoms in the alkyl group. Generally, the III were less potent than the II. The highest diuretic activities in rats were shown by the α-alkyl-2-piperidineethanols and the III containing 2-substituents of the aryl or cycloalkyl type when administered orally.

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DT Journal
LA Unavailable
AB cf. C.A. 43, 5370f. Anisylcyclone [3,4-bis(p-methoxyphenyl)-2,5-diphenylcyclopentadienone] (I) (0.5 g.), 2 ml. BuOCH:CH2 and 15 ml. C6H6 in 14 hrs. at 150-60° in sealed tube gave 80% of a compound (II), m. 180-1° (from Me2CO). Similarly iso-AmOCH:CH2 gave in 23 hrs. 73% of the same II, m. 180-1°, apparently through loss of endocarbonyl bridge and ROH. PhOCH:CH2 and CH2:CHOCH(CH2OCH:CH2)2 gave the same result, as did AcOCH:CH2. CH2:CHCl also gave 50% II. However, cyclone (III) and CH2:CHNHCH2CH2OH (IV) gave in 8 hrs. at 160° 37.4% 1,2,3,4-tetraphenylbenzene (V), m. 189-90°. III and N-vinylcaprolactam (VI) in 8 hrs. at 200° gave 50% V. I and IV gave 25% II, while VI gave 75%. III and PhCH:CHNO2 in 30 hrs. at 170° gave 50.8% pentaphenylbenzene, m. 244-5°. Acecyclone (8H-cyclopent[a]acenaphylen-8-one) similarly gave in 30 hrs. at 170° 68.7% 1,4,5-triphenyl-2,3-(1,8-naphthylidene)benzene (VII), m. 194-5°. I and PhCH:CH2NO2 in C6H6 gave in 10 hrs. at 160° 70% 1,4,5-triphenyl-2,3-bis(p-methoxyphenyl)benzene (VIII), m. 222-3°. III and PhCH:CHBr in C6H6 gave in 12 hrs. at 150-60° and 15 hrs. at 180-90° 83.3% C6HPh5, m. 244-5°, while acecyclone gave 66.6% VII, while I gave 66.6% VIII.

L4 ANSWER 10 OF 12 CAPLUS COPYRIGHT 2009 ACS on STN
AN 1953:61847 CAPLUS
DN 47:61847
OREF 47:10488a-d
TI Ketimines. IV. From fencholonitrile
AU Pickard, P. L.; Engles, E. F.
CS Univ. of Oklahoma, Norman
SO Journal of the American Chemical Society (1952), 74, 4607-8
CODEN: JACSAT; ISSN: 0002-7863
DT Journal
LA Unavailable
AB cf. C.A. 46, 441i. Fencholic acid (94 g.) and excess SOCl2 heated carefully yielded 98 g. fencholyl chloride (I), b4 68-72°. I in Et2O saturated with NH3 gave nearly quant. fencholamide, m. 109°,

which, refluxed several hrs. with POCl3, yielded fencholonitrile (II), b1 58-9°, nD20 1.4434, d20 0.8806. II hydrogenated over Raney Ni at 100 atmospheric gave 1-methyl-3-isopropylcyclopentanemethylamine, b. 202-4°, nD20 1.4550, d20 0.8608; N-Bz derivative, m. 82°; N-PhSO2 derivative, m. 112°; picrate, m. 161°. From II were prepared by the method previously described (loc. cit.) the following alkyl 1-methyl-3-isopropylcyclopentyl ketimines (III) [alkyl, yield (%), b.p., nD20, and d20, resp. given]: iso-Pr, 47, b4 93°, 1.4691, 0.8650 (N-PhSO2 derivative, m. 78°); Bu, 46, b1 90-2°, 1.4639, 0.8669; iso-Bu, 61, b2 87-90°, 1.4635, 0.8653; sec-Bu, 40, b3 98-101°, 1.4651, 0.8692; iso-Am, 54, b3 108-12°, 1.4649, 0.8639; and Ph, 15, b1.5 137-40°, 1.5255, 0.9681 [picrate, m. 279° (decomposition); HCl salt, m. 137°]. Reduction of the III in MeOH over PtO2 at atmospheric pressure yielded the following CH2.CH2. CH(CHMe2).CH2.CMeCH(NH2)R (R, b.p., nD20, and d20 given): Bu, b1 92-3°, 1.4620, 0.8574; iso-Bu, b1 92°, 1.4609, 0.8549; sec-Bu, b3 105-8°, 1.4674, 1.8655; iso-Am, b3 113°, 1.4624, 0.8565; and Ph, b735 299-301°, -, -(picrate, m. 177°). The III refluxed 3 h. with 6N HCl yielded the following alkyl 1-methyl-3-isopropylcyclopentyl ketones; Bu, b1 97-9°, 1.4543, 0.8793; iso-Bu, b1 85-7°, 1.4527, 0.8763; sec-Bu, b6 104°, 1.4539, 0.8791; iso-Am, b6 120-2°, 1.4544, 0.8769; Ph, -, -, - (2, 4-dinitrophenylhydrazone, m. 138°).

L4 ANSWER 11 OF 12 CAPLUS
AN 1935:3584 CAPLUS
DN 29:3584
OREF 29:450c-i,451a-i,452a-b
TI The reaction of aldehydes with metals and their catalytic pressure hydrogenation
AU v. Braun, Julius; Manz, Gottfried
SO Berichte der Deutschen Chemischen Gesellschaft [Abteilung] B: Abhandlungen (1934), 67B, 1696-712
CODEN: BDCBAD; ISSN: 0365-9488
DT Journal
LA Unavailable
GI For diagram(s), see printed CA Issue.
AB On hydrogenation under pressure at high temps. with Ni, nonaromatic aldehydes give, along with the expected primary alcs., considerable quantities of unsatd. OH compds. with double the number of C atoms, e. g., C14H29OH from enanthal, C7H14O (C. A. 18, 814). On the assumption that they are straight-chain compds. (Me(CH2)6CH(OH)(CH2)5Me from enanthal), it seemed that they might be formed according to 1 of the 2 following schemes (it was shown that they are not produced through a glycol RCH(OH)CH(OH)R formed primarily): RCH2CHO + OHCCH2R → RCH2CH(OH)COCH2R (I) → RCH:CHCOCH2R (II) → RCH2CH2CH(OH)CH2R (III), or RCH2CHO + OHCCH2R → RCH:CHOH + OHCCH2R → II → III. The first of these 2 possibilities, which seemed the more probable, is excluded by the fact that campholic and fencholic aldehydes, in which the CHO group is on a tertiary C atom, react exclusively like aromatic aldehydes with formation of the corresponding primary alcs. The 2nd possibility was also excluded by expts. made with special care on decylic aldehyde (IV). With Ni and H, IV gives, besides decyl alc., an alc. C20H41OH (V) which cannot be converted into crystalline eicosane; V or its bromide gives only an isomeric liquid eicosane (VI) and therefore the chain in V must be branched. The nature of the branching was shown by degradation expts.; the hydrogenation product of PrCHO gave pure BuCOEt, that of iso-BuCHO yielded iso-AmCOCHMe2, and that of enanthal formed C7H15COAm. The primary stage in the reduction of the aldehydes RCH2CHO must therefore be not RCH:CHOH but the aldol RCH2CH(OH)CHRCHO or the unsatd. aldehyde RCH2CH:CRCHO (VII). These aliphatic aldehydes RCH2CHO heated under N in steel autoclaves change rapidly, first into VI, and then

into much higher boiling isomers with triple the mol. weight which, however, are not paraldehydes but the glycol esters, RCH2(OH)CHRCH2OCOCH2R (cf. Neustadter, Monatsh. 27, 903(1906), and earlier papers by pupils of Lieben). The structure of these glycol esters has been confirmed by oxidation to the keto esters RCH2COCHRCH2OCOCH2R, and by dehydration to the unsatd. esters RCH2CH:CRCH2OCOCH2R which, after saponification, yield the unsatd. primary alcs. RCH2CH:CRCH2OH and then the saturated primary alcs. The change undergone by aldehydes heated in steel autoclaves is not a reaction of the aldehydes alone; the material of the autoclave plays a role. A considerable amount of metal powder (chiefly Cu, from the gaskets) was always formed; moreover, even at room temperature in the absence of air and moisture, aldehydes react distinctly with finely divided metals (Cu, Fe, Co, Ni, Cr, Zn, Mn) with primary evolution of H. In a short time colored solns. are formed, a flocculent metallic hydroxide gradually ppts. out, then a separation of water is observed, and after long standing VII and the glycol ester can be isolated as in the autoclave expts., although the yields of glycol ester are much smaller. Presumably a metal enolate RCH:CHOM is first formed which yields with comparative ease the aldol RCH2CH(OM)CHRCHO and the latter changes, much less readily, through RCH2CH((CHRCHO)OCH((OM)CH2R and and through RCH2CH(CHRCHO)OCH(OM)CH2R and to RCH2CH(OM)CHRCH2OCOCH2R. In the cold, the aldol has time to change chiefly into the unsatd. aldehyde and metal hydroxide, whereas on heating the change into glycol predominates. Different metals vary distinctly in their influence on the reaction, but no relation between their influence and their properties (e. g., their position in the tension series) has as yet been established. All the expts. with metals at room temperature were made in Jena glass, so the alkalinity of the glass played no part.

β-Decyl-β-octylethyl alc. (V) b17 230°; bromide, b0.4 195°, reacts quite readily with Mg in ether, yielding asym-decyloctylethane (VI), b14 200°, also obtained by catalytic hydrogenation with Pd and H of the ethylene, b12 193-5°, d422.5 0.8102, which is best prepared by boiling the bromide with 2-3 mols. aqueous alc. KOH until free from halogen, precipitating with water and boiling 10-12 hrs. with 60% H2SO4. β-Butyl-β-ethylethyl alc., from PrCHO, b15 84-6°, d420 0.8381, nD 1.4335; bromide, b15 73-6°, forms with NMe3 in benzene at 100° the quaternary bromide BuEt-CHCH2NMe3Br, which m. above 200° and yields on treatment with Ag2O and distillation with alkali the tertiary dimethylamine, b. 177-9° (methiodide, m. 215°), and asymbutylethylethylene, b. 116-18°. The latter on ozonization gives BuCOEt. Heated 3 hrs. under N at 300° in a steel autoclave, PrCHO gives 25% unchanged PrCHO, 50% αethyl-β-propylacrolein, b. 172°, and 15% of the glycol ester, C12H24O3, b10 148-50°, saponified to PrCO2H and the glycol, C8H18O2, b12 131-3°, d422 0.9789, nD12 1.4537. With 1 mol. PrCOCl in pyridine, the glycol regenerates the above ester and with 2 mols. chloride forms the dibutyrate, b12 154-8°. The dichloride and dibromide, b0.2 50° and 82°, resp., from the glycol with concentrated HCl and HBr at 120°, are unstable and lose considerable halogen acid when distilled in the vacuum of a water pump. The structure of the acrolein was established by hydrogenation with Pd and H and conversion of the oxime, C8H17ON, b10 104-6°, of the product with PCl5 into the nitrile, b10 75°, of BuEtCHCO2H. The glycol treated in a current of H with Beckmann's mixture (2 atoms O) gives about 50% of a compound C8H14O2, b12 100-3° (presumably chiefly the HO aldehyde PrCH(OH)CHEtCHO; oxime, b. 140-5°), and the yellow diketone PrCOCOEt, b. 147-9°. The latter is also formed, in very small amount, with the keto ester, PrCOCHEtCH2OCOPr, b. 130-4°, from the glycol ester with CrO3AcOEt. The glycol ester is best dehydrated with PCl3 in CH2Cl2; the resulting α-ethyl-β-propylallyl alc. (65-70% yield), b12 68-71°, d422 0.8414, nD 1.4418; acetate, b. 79-81°; bromide, b12 68-70°, splits off HBr with cold water,

forms with NMe3 a quaternary bromide, m. 175°, and yields with
NH4SCN the mustard oil, C8H15NCS, b. 105-10°. The yield of glycol
ester is not increased by adding the unsatd. aldehyde to the PrCHO before
heating in the autoclave; the acrolein is therefore not an intermediate
stage in the production of the glycol ester. That the acrolein is formed
by direct dehydration of 2 mols. PrCHO is confirmed by the behavior of the
PrCHO in the presence of BzH; heating after addition of BzH gives
α-ethylcinnamaldehyde, b10 126-8°, d422 1.0201, nD16 1.5847,
which is reduced by Pd and H to β-ethyl-β-benzylethyl alc., b10
126-8°. β-Heptyl-β-amylethyl alc., from enanthal, forms
a bromide, b11, 154-6°; the quaternary bromide obtained with NMe3
and the quaternary chloride are soluble in ether, and evaporation of the
C6H6-Et2O
solns. leaves viscous residues, but the chloroplatinate, C34H76N2Cl8Pt,
seps. in golden yellow leaflets decomposing 218°. The tertiary amine,
Am(C7H15)CHCH2NMe2, b11 143-5°, and the ethylene, Am(C7H15)C:CH2,
b11 117-18°, d422.5 0.7728, nD 1.4374; the latter on ozonization
gives heptyl Am ketone, b11 128-9°, m. 18.5°, d425 0.8244,
nD 1.4320. The glycol ester, C21H42O3, from enanthal, b0.3 176-8°,
d417 0.9012, nD 1.4554, is saponified by alkali to enanthic acid and the
glycol, C6H13CH(OH)CHAmCH2OH, which distils under 12 mm. as a thick
liquid; the diketone, b12 110°, has not yet been obtained in
entirely pure form. 2-Isopropyl-5-methylhexanol, from iso-BuCHO, b11
92-5°; bromide, b11 92-5°; trimethylammonium bromide, m.
152°; dimethylamine, b. 196-8° (methiodide, m. 132°);
asym-isoamylisopropylethylene, b. 150°, d424 0.7387, nD24 1.4202;
iso-Am iso-Pr ketone, b10 58°, d425 0.8135, nD 1.4147; glycol
ester, iso-BuCH(OH)CH(CHMe2)CH2OCOCH2CHMe2, b12 150-8° (Rosiner,
Monatsh. 22, 545(1901)), dehydrated by PCl3 and saponified with alkali, gives
enanthic acid and α-isopropyl-β-isobutylallyl alc., b12
80-5°, d420 0.8375, nD 1.4485.

L4 ANSWER 12 OF 12 CAPLUS
AN 1909:11631 CAPLUS
DN 3:11631
OREF 3:2146h-i,2147a
TI Synthesis of Derivatives of dl-Fenone
AU Bouveault, L.; Levallois
SO Compt. rend. (1909), 148, 1399-401
DT Journal
LA Unavailable
GI For diagram(s), see printed CA Issue.
AB (cf. C. A., 2, 1279. Bouveault and Blanc, C.A., 2, 1445).
Dihydrocamphocenyl chloride (I), b16 98°, condenses wih C6H6, in
presence of AlCl3, giving 1-isopropyl-3-benzoylcyclopentane (II), b12
166°. Oxime, m. 128°. Alkylation of this ketone with MeI,
in presence of NaNH2, gave 1-isopropyl-3,3-methylbenzoylcyclopentane
(III), b15 172°. Oxime, m. 96.5°. When this methylated
ketone was warmed with NaNH2 in toluene,
1-isopropyl-3,3-methylcarboxylpentaneamide (IV) was obtained, m.
116° (Barbier and Grignard, Bulletin society chim. [4], 5, 523).

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---Logging off of STN---

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Executing the logoff script...

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                                                       ENTRY    SESSION
FULL ESTIMATED COST                                    40.50     226.60

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)        SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                    -9.84      -9.84

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